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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/803,391	03/09/2001	Keiichi Mori	OOCL-51 (2SK-01S0135)	8703
26479	7590	05/04/2005	EXAMINER	
STRAUB & POKOTYLO 620 TINTON AVENUE BLDG. B, 2ND FLOOR TINTON FALLS, NJ 07724			YODER III, CHRISS S	
			ART UNIT	PAPER NUMBER
			2612	

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/803,391

Applicant(s)

MORI ET AL.

Examiner

Chriss S. Yoder, III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 13-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06/01, 01/05, 03/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election of claims 1-12 in the reply filed on December 6, 2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 13-29 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on December 6, 2004.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Image pickup device capable of adjusting the overflow level of the sensor based on the read out mode."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al. (US Patent # 5,786,852).

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2. In regard to claim 1, note Suzuki discloses the use of an image pickup device comprising a solid-state imaging element (figure 1: 1), a driving means for driving said solid-state imaging element (figure 1: 4), an overflow level setting means for controlling a substrate bias voltage of said solid-state imaging element in order to variably set an overflow level of a charge accumulating portion of the solid-state imaging element, the overflow level being determined according to the substrate bias voltage (column 9, lines 49-52 and column 9, line 61-column10, line 7; the overflow level is set based on the change in V_{sub}), and a reading control means capable of reading pixel charges as an output signal by means of said driving means in a normal driving mode in which individual pixel charges of said solid-state imaging element are read separately or in an n-addition driving mode in which a specific number "n" of pixel charges in the vertical direction of said solid-state imaging element are added and then read (column 9, lines 49-52 and column 9, line 61-column10, line 7; the field mode reads out pixels that have been added, and the frame mode reads out every pixel, this can be seen in column 1, lines 32-40), wherein said overflow level setting means controls said substrate bias voltage to a different value, depending on whether the reading control means reads the pixel charges in said normal driving mode or in said n-addition driving mode (column 9, lines 49-52).

3. In regard to claim 2, note Suzuki discloses the use of said overflow level setting means controls said substrate bias voltage based on a relationship between the overflow level of the charge accumulating portion and a saturated level of a horizontal transfer path included in said solid-state imaging element (column 13, line 54 – column

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14, line 10; the overflow level is set using the saturation capacity of the photoelectric conversion cells as well as the saturation value of the horizontal transfer part).

4. In regard to claim 3, note Suzuki discloses the use of further comprising said substrate bias voltage in said n-addition driving mode created based on a measured value of the relationship between the overflow level of said charge accumulating portion of said solid-state imaging element and the substrate bias voltage is stored beforehand (column 9, line 61- column 10, line 7; V_{sub} is created based on the relationship between the overflow level of the charge accumulating portion and the substrate bias voltage; as for the storage of the values, this is not explicitly stated, however, it is inherent, because if the values were not stored, the imaging device would not know what level to adjust the level to), and wherein said overflow level setting means controls said substrate bias voltage in said n-addition driving mode based on the adjustment information in said storage means (column 9, lines 49-52 and column 9, line 61- column 10, line 7).

5. In regard to claim 4, note Suzuki discloses the use of an image pickup device comprising a solid-state imaging element (figure 1: 1), a driving means for driving said solid-state imaging element (figure 1: 4), an overflow level setting means for controlling a substrate bias voltage of said solid-state imaging element in order to variably set an overflow level of a charge accumulating portion of the solid-state imaging element, the overflow level being determined according to the substrate bias voltage (column 9, lines 49-52 and column 9, line 61-column 10, line 7; the overflow level is set based on the change in V_{sub}), reading control means capable of reading pixel charges as an output

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signal by means of said driving means in an n-addition driving mode in which a specific number "n" of pixel charges in vertical direction of said solid-state imaging element are added and then read (column 9, lines 49-52 and column 9, line 61-column 10, line 7; the field mode reads out pixels that have been added, and the frame mode reads out every pixel, this can be seen in column 1, lines 32-40), wherein said overflow level setting means controls said substrate bias voltage to a different value according to the value of "n" in the n-addition driving mode by said reading control means (column 9, lines 49-52; the value is changed based on the value of "n"; e.g. if n is equal to one, the value is different than if n is equal to 2).

6. In regard to claim 5, note Suzuki discloses the use of said overflow level setting means controls said substrate bias voltage based on a relationship between the overflow level of the charge accumulating portion and a saturated level of a horizontal transfer path included in said solid-state imaging element (column 13, line 54 – column 14, line 10; the overflow level is set using the saturation capacity of the photoelectric conversion cells as well as the saturation value of the horizontal transfer part).

7. In regard to claim 6, note Suzuki discloses the use of further comprising said substrate bias voltage in said n-addition driving mode created based on a measured value of the relationship between the overflow level of said charge accumulating portion of said solid-state imaging element and the substrate bias voltage is stored beforehand (column 9, line 61- column 10, line 7; V_{sub} is created based on the relationship between the overflow level of the charge accumulating portion and the substrate bias voltage; as for the storage of the values, this is not explicitly stated, however, it is

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inherent, because if the values were not stored, the imaging device would not know what level to adjust the level to), and wherein said overflow level setting means controls said substrate bias voltage in said n-addition driving mode based on the adjustment information in said storage means (column 9, lines 49-52 and column 9, line 61-column10, line 7).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 7-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Kijima et al. (US Patent # 6,661,451).
9. In regard to claim 7, note Kijima discloses the use of driving device of a solid-state imaging device (figure 1: 12) comprising a driving unit configured to drive the solid-state imaging device in either an addition driving mode in which a plurality of pixels are added and read as a single pixel or a non-addition driving mode (figure 1: 20 and column 2, lines 54-56), and a substrate bias voltage supply configured to apply a bias voltage to a substrate of the solid-state imaging device according to a driving mode (column 11, lines 57-67).
10. In regard to claim 8, note Kijima discloses that said substrate bias voltage supply applies a different bias voltage in the addition driving mode from that in the non-addition driving mode (column 11, lines 57-67).
11. In regard to claim 9, note Kijima discloses that said substrate bias voltage supply, in the addition driving mode, applies a different bias voltage to the solid-state imaging device according to the number of pixels added by said driving unit (column 8, lines 51-67 and column 11, lines 57-67; if the number of pixels added is two, the substrate bias

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voltage is set to $\frac{1}{2}$ the original, and if the number of pixels added is three, the substrate bias voltage is set to $\frac{1}{3}$ the original).

12. In regard to claim 10, note Kijima discloses that said driving unit, in the addition driving mode, supplies to the solid-state imaging device such a driving pulse as adds a specific number (n: an integer equal to or larger than 2) of pixel charges in a vertical direction of said solid-state imaging device and reads a result of addition (column 3, lines 59-63).

13. In regard to claim 11, note Kijima discloses a driving device of a solid-state imaging device (figure 1: 12 and 20; column 2, lines 54-56) comprising a driving unit configured to drive the solid-state imaging device in an addition driving mode in which a plurality of pixels are added and read as a single pixel (figure 1: 20 and column 3, lines 47-67); and a substrate bias voltage supply configured to apply a bias voltage to a substrate of the solid-state imaging device according to the number of pixels added by said driving unit (column 11, lines 57-67).

14. In regard to claim 12, note Kijima discloses that said driving unit supplies to the solid-state imaging device such a driving pulse as adds a specific number (n: an integer equal to or larger than 2) of pixel charges in a vertical direction of the solid-state imaging device and reads a result of addition (column 3, lines 59-63).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US006515703B1: note the use of an imaging device with normal and n-addition mode that set the overflow based on the number of pixels to be added.

US006778214B1: note the use of an imaging device that adjusts the overflow drain of the image sensor.

US005978024A: note the use of an imaging device that adjusts the overflow drain of the image sensor.

US005902995A: note the use of an imaging device that adjusts the overflow drain of the image sensor.

US005464996A: note the use of an imaging device that adjusts the overflow drain of the image sensor.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chriss S. Yoder, III whose telephone number is (571) 272-7323. The examiner can normally be reached on M-F: 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CSY
April 26, 2005


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